

REMARKS

Claims 1-12 remain pending in this application with claims 1, 8 and 9 being amended by this response.

Claim 1 has been formally amended for purposes of clarity to recite that the element with longitudinal radiation is with an axis coincides with the axis of radiation. This feature responds to the comments of the Examiner stating that the term “longitudinal radiation” does not necessarily imply that the radiation is along any axis without a definite recitation of the axis of radiation or the extent of the antenna. This feature was presented for examination in original claims 8 and 9 and thus it is respectfully submitted that no new issues are raised by this amendment to claim 1. Claims 8 and 9 have formally been amended by deleting the term “with axis coinciding with the axis of radiation”.

Rejection of claims 1-7, 9 and 12 under 35 U.S.C. 103(a)

Claims 1-7, 9 and 12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Fuchs et al.

The present claimed invention recites a source-antenna for transmitting/receiving electromagnetic waves comprising an array of n radiating elements operating in a first frequency band and an element with longitudinal radiation operating in a second

frequency band and situated at the center of the array, the element having an axis coinciding with the axis of radiation. The array of n radiating elements and the element with longitudinal radiation have a substantially common phase center. The n radiating elements are arranged symmetrically about the longitudinal-radiation element, wherein each radiating element of the array consists of a traveling wave antenna.

The present claimed invention is used to obtain two identical radiating diagrams at two frequencies. The two radiating diagrams present a longitudinal axis of radiation. Thus, with the structure of the present claimed invention, it is possible to use one of the frequency bands for the reception of electromagnetic waves and the other frequency band for the transmission of electromagnetic waves.

In Fuchs et al., four embodiments are described:

A first embodiment illustrated in Figure 6 includes a cross dipole with a longitudinal radiation for satellite communication, and a network of 4 monopoles arranged symmetrically about the cross dipole, the monopoles radiate perpendicularly to the longitudinal radiation for the terrestrial communication.

A second embodiment illustrated in Figures 22-25 includes a quadrifilar helix (classical solution for the satellite communication in circular polarization) with a longitudinal radiation and 4 monopoles arranged symmetrically about the quadrifilar helix for the terrestrial communication.

A third embodiment shown Figures 26-29 includes the same quadrifilar helix of the second embodiment for satellite communication and only one monopole positioned concentrically within the helix for terrestrial communication.

A fourth embodiment shown in Figures 30-33 has a solution identical to the solution of the third embodiment. However, instead of the monopole, a sleeve dipole is used. The sleeve dipole is a transversal radiating element and this element is used for terrestrial communication.

In all these embodiments, there are two types of radiating elements presenting radiations in perpendicular directions: i) monopole or sleeve dipole having a radiation in the horizontal plane with a minimum in the vertical direction (Fig. 12' and ii) helix or cross dipole having a longitudinal radiation in the vertical direction (Fig. 10). Due to the fact that both radiations are perpendicular, the elements are able to operate in the same band with a good isolation (column 7, paragraph 2).

In Fuchs et al., the monopole 320 or dipole 420 is used for terrestrial radiation and emits transversal radiation as shown in Figure 1. Fuchs et al. neither disclose nor suggest emission of longitudinal radiation as in the present claimed invention.

In view of the above remarks and amendments to claim 1, it is respectfully submitted that claim 1 is patentable over of Fuchs et al. As claims 2-7, 9 and 12 are

dependent on claim 1 it is respectfully submitted that these claims are patentable for the same reasons as claim 1 discussed above. Thus, withdrawal of this rejection under 35 U.S.C. 103(a) is respectfully requested.

Rejection of claims 8, 10 and 11 under 35 U.S.C. 103(a)

Claims 8, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuchs et al as applied to claims 1 and 7 above and further in view of Spencer (5757323) and Chen (6396440).

Spencer was cited to show a longitudinal antenna. Spencer recites a microstrip patch or slot radiating element coupled to a dielectric rod antenna via a tapered tubular dielectric guide formed integrally with the rod. An array of radiating elements may be formed on a substrate and the guide/rod antenna may be arranged to direct the energy radiated from these elements to a secondary antenna.

Chen was cited to show feeding arrangements that may be used to feed helical antennas. Chen discloses a phased array antenna including a plurality of radiation elements, a power supply unit a power distributor, a feed probe, a plurality of electromagnetic coupling units and a plurality of phase shifters. The radiation elements are aligned and arranged to be electromagnetically driven. The power distributor includes a pair of parallel conductive plates and acts as a radial waveguide distributing power to the radiation elements. The feed probe is arranged on one of the conductive

plates to radiate an electromagnetic wave into the waveguide based upon the supplied power. The electromagnetic coupling units are arranged on the other conductive plate to extract the electromagnetic wave radiated from the feed probe and propagating through the radial waveguide by electromagnetic coupling. The phase shifters control a phase of the electromagnetic wave extracted by the electromagnetic coupling units and supply the electromagnetic wave to the radiation elements.

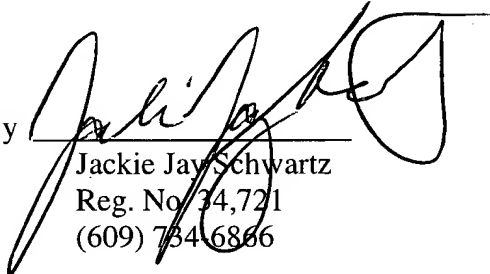
Similarly to Fuchs et al., neither Spencer nor Chen disclose or suggest emission of longitudinal radiation as claimed in claim 1 of the present claimed invention. Thus, it is respectfully submitted that Spencer and Chen, when taken alone or in any combination with Fuchs et al., do not make the present claimed invention unpatentable. As claims 8, 10 and 11 are dependent on claim 1 it is further respectfully submitted that these claims are patentable for the same reasons as claim 1 discussed above and that this rejection is satisfied and should be withdrawn.

Having fully addressed the Examiner's rejections, it is believed that, in view of the preceding amendments and remarks, this application stands in condition for allowance. Accordingly then, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicant's attorney at the phone number below, so that a mutually convenient date and time for a telephonic interview may be scheduled.

No fee is believed due. However, if a fee is due, please charge the fee to Deposit
Account 07-0832.

Respectfully submitted,
Patrice Hirtzlin

By



Jackie Jay Schwartz
Reg. No. 34,721
(609) 734-6866

Patent Operations
Thomson Licensing, Inc.
P.O. Box 5312,
Princeton, NJ 08543-0028
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